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DEPARTMENT OF ENERGY

FINDING OF NO SIGNIFICANT IMPACT SUPERCOMPACTOR AND REPACKAGING FACILITY AND TRU WASTE SHREDDER ROCKY FLATS PLANT, GOLDEN, COLORADO

AGENCY DEPARTMENT OF ENERGY

ACTION FINDING OF NO SIGNIFICANT IMPACT

SUMMARY The Department of Energy (DOE) has prepared an environmental assessment (EA) of the proposed action to complete construction and to operate a supercompactor and repackaging facility (SARF) and a transuranic (TRU) waste shredder (TWS) in the existing Building 776 at the Rocky Flats Plant (RFP) The SARF and the TWS, respectively, would compact and shred solid plutonium-contaminated TRU wastes, including TRU wastes that contain hazardous chemical constituents (TRU-mixed wastes) The purpose of the proposed action is to reduce the waste volumes, waste processing costs, and external radiation exposure to workers Although the EA demonstrates that the risks associated with the proposed operation of the SARF/TWS and the storage of supercompacted wastes at RFP are low, the DOE is continuing to evaluate options to reduce risks as low as possible For example, efforts will be implemented over the next two to three years to reduce the risk of storing supercompacted wastes to levels lower than those associated with the status quo by transferring wastes into buildings designed to withstand severe natural phenomena, e g , earthquakes and high winds

The DOE issued a proposed finding of no significant impact (FONSI) on March 24, 1990, and distributed the EA and proposed FONSI for a 30-day public review period beginning on March 30, 1990, with the publication of the proposed FONSI in the Federal Register (Vol 55, No 62, pp 11997-12000) During the week of March 26, 1990, copies of the EA and proposed FONSI were delivered to the Governors of Colorado and New Mexico, Colorado congressional delegates, local officials, interested organizations, public reading rooms and local libraries Additionally, advertisements explaining the opportunity to provide comment on the EA and the proposed FONSI were published in several local newspapers In response to a request made by the State of Colorado and others, the public review period was extended to May 22, 1990, notification of this extension was published in the Federal Register on May 16, 1990 In total, 154 comments were received from 14 organizations and individuals These comments were grouped by technical area, responses were prepared,

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and a "Response to Comments on DOE/EA-0432," July 1990 document was issued as Appendix F to the EA This Appendix F has been sent to each of the commenters, and has been made available in the Rocky Flats Public Reading Room to other interested parties Five of the 154 comments provided remarks directly on the proposed FONSI In addition to being addressed in the Appendix F to the EA, these five comments and the DOE responses are included in the Attachment to this notice Also, comments received on the EA and the respective responses are summarized in the same attachment

After considering all the comments received as a result of the public review process, DOE has concluded that no new information has been made available that would change the determination that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969, (42 U S C 4321 et seq) Therefore, at this time the DOE is prepared to finalize the proposed FONSI

ADDRESSES AND FURTHER INFORMATION Persons requesting additional information regarding the SARF/TWS project or wishing a copy of the EA or its Appendix F "Response to Comments on DOE/EA-0432", July 1990 should contact

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SUPPLEMENTARY INFORMATION

BACKGROUND The Rocky Flats Plant (RFP) is a part of the national nuclear weapons research, development, and production complex administered by the DOE As a result of nuclear weapons production activities and other programs, RFP produces plutonium-contaminated TRU radioactive wastes as well as TRU wastes that

contain nonradioactive hazardous chemical constituents (TRU-mixed wastes) In the past, approximately 34,000 cubic feet (average for 1987 and 1988 fiscal years) of such wastes were repackaged annually at RFP by opening the waste drums, manually removing the packages of waste, and placing the packages of waste into a waste box This repackaging method results in minimal volume reduction The SARF would replace this inefficient manual process of repackaging waste from drums to waste boxes

The Colorado Department of Health (CDH) limits on-site storage of TRU-mixed wastes to a volume of 1601 cubic yards The proposed action would compact TRU-mixed waste, and allow storage of effectively twice as much TRU-mixed waste at RFP, thereby enabling operations to continue in compliance with the CDH requirements until alternate storage (on-site and off-site alternatives are being considered) and/or disposal sites are approved

PROPOSED ACTION The proposed action is to construct and operate the SARF to reduce the volume of TRU and TRU-mixed wastes and to construct and operate the TWS to shred classified graphite molds and used filters The purpose of the proposed action is to reduce the external radiation dose to workers, reduce waste volume and process costs, and enable operations at RFP to continue in compliance with RCRA requirements Average volume reductions of 5 to 1 and 2 to 1 are expected for wastes to be processed in the SARF and TWS, respectively An overall volume reduction of approximately 2 to 1 would be achieved for all RFP TRU wastes, taking into account that there are certain wastes that cannot be supercompacted

Wastes processed by the SARF and the TWS would be stored in designated storage areas in existing buildings on-site until either transferred to alternate storage site(s) or shipped to the Waste Isolation Pilot Plant (WIPP) Transportation of all supercompacted wastes would take place in double-walled steel shipping containers certified by the Nuclear Regulatory Commission (NRC), referred to as Transuranic Package Transporters (TRUPACT II) (WIPP is a mined repository in New Mexico at which the Department of Energy plans to conduct research and development to evaluate its use as a potential disposal facility for defense-related TRU and TRU-mixed wastes For a detailed discussion of transportation and operations associated with the WIPP, see the WIPP Final Supplement Environmental Impact Statement, DOE/EIS-0026-FS, January 1990)

All drums and boxes of waste that would be treated in the SARF or the TWS would first be scanned by non-destructive assay equipment to assure that the containers do not exceed established fissile material limits In addition, all drums to be processed in the SARF would be scanned by real time radiography equipment to assure that the containers do not contain free liquids

Two categories of waste would be processed in the SARF soft or combustible waste and hard or noncombustible waste Combustible wastes include such items as paper and plastic Noncombustible wastes include miscellaneous metals, piping, motors, glass, Raschig rings, process filters, and high efficiency particulate air (HEPA) filters Hard wastes packaged in 35-gallon steel drums would be directly supercompacted (drum and all) into "pucks", and the pucks would be loaded into 55-gallon steel drums for final disposal Bags of soft wastes, initially packaged in 55-gallon drums, would be unpackaged and precompacted into 35-gallon drums and then supercompacted as described above To achieve further volume reduction, process filters and HEPA filters may also be precompacted into 35-gallon drums and then supercompacted into pucks, the same as soft wastes Supercompaction would be achieved by a 2,200-ton hydraulic ram cylinder Precompaction would be achieved by a 30-ton hydraulic ram cylinder During the initial SARF operating period, an estimated maximum of approximately 15,000 cubic feet of TRU and TRU-mixed wastes would be removed from storage, repackaged, and supercompacted concurrently with the normal waste production feed to SARF

The TWS would be used to declassify and reduce the size of graphite molds, and to shred and reduce the size of filters The shredder would consist of two counter-rotating shafts with knives that would shred the waste materials into scraps measuring approximately 1 inch by 2 inches by 2 inches or smaller Shredded molds would be loaded into 55-gallon drums for storage and disposal Shredded filters would be loaded into 35-gallon drums for supercompaction

Both the SARF and the TWS processing equipment would be operated in gloveboxes in order to limit radiological and hazardous chemical exposures to workers The glovebox enclosures would be maintained under negative air pressure, relative to the air pressure within the surrounding room Air effluents from the gloveboxes would be filtered through four stages of HEPA air filters before being discharged to the atmosphere through rooftop vents The air in the room surrounding the gloveboxes and the air being discharged to the

atmosphere would be continuously monitored to detect increases in airborne alpha radiation If alpha radiation were detected in concentrations exceeding 0 02 picocuries/cubic meter, an investigation will be conducted to determine the cause(s) and the corrective action that will be taken

Numerous control measures have been included in the design and operating procedures for the SARF and the TWS to mitigate and control potential nonroutine hazards Both the SARF and the TWS gloveboxes would contain fire prevention, detection, and suppression systems Nuclear criticality controls would be implemented to limit the plutonium content in the wastes and to establish standard procedures that would eliminate the potential for a nuclear criticality incident Prior to and during waste treatment in the SARF and the TWS, wastes would be segregated to avoid mixing of incompatible wastes In order to prevent TRU waste from becoming contaminated by TRU-mixed waste, cleaning procedures would be used to decontaminate both the SARF and the TWS treatment equipment whenever a batch of TRU waste was to be treated after a batch of TRU-mixed waste In order to mitigate the potential for gas buildup in drums of supercompacted waste, the drums would be equipped with carbon composite filters to permit venting of the gas while retaining radioactive materials

Although the EA demonstrates that the risks associated with the proposed operation of the SARF/TWS and the storage of supercompacted waste are low, the DOE is continuing to evaluate all possible options to reduce the risks to the lowest possible levels For example, efforts will be implemented over the next two-to-three-year period to reduce the risk of storing supercompacted wastes to levels lower than those associated with the status quo by transferring wastes into buildings designed to withstand severe natural phenomena, e g , earthquakes and extreme winds

ALTERNATIVES CONSIDERED Alternatives to the proposed action that were discussed in the EA included the no action alternative, the packaging line and in-drum compactor alternative, and the no treatment alternative

Under the no action alternative (i e , continuing current operations), wastes would continue to be manually repackaged from drums into standard waste boxes The no action alternative would require three workers to continue using supplied air suits during normal operations, which is contrary to the DOE policy to

reduce radiation exposures to levels as-low-as-reasonably-achievable (ALARA) and to an RFP directive to implement ALARA by eliminating routine operations which require use of supplied breathing air Although much less efficient than the proposed action, the no action alternative would provide minimal volume reduction and a more efficient method of waste handling than the no treatment alternative (see below)

The repackaging line and in-drum compactor alternative would reduce the volume of soft wastes by shredding and compaction (not supercompaction) of the wastes into 55-gallon drums The in-drum compactor would achieve a soft waste volume reduction of approximately 3 to 1 With this alternative, hard wastes would continue to be manually repackaged

Under the no treatment alternative, drums of TRU and TRU-mixed wastes would be prepared by the RFP generator for direct shipment to storage and/or off-site disposal There would be no volume reduction and there would be an increase in the number of waste containers relative to any other alternative

ENVIRONMENTAL CONSIDERATIONS Because the SARF and the TWS treatment equipment would be operated inside gloveboxes located inside the existing Building 776, there would be no direct construction-related impacts to wetlands, threatened or endangered species, or historical resources Routine operation of the SARF and TWS would create no detectable increases in radioactive or non-radioactive emissions to the existing environment and would not affect continued compliance with the Clean Air Act The proposed action would create no wastewater effluents or discharges and would not affect compliance with the Clean Water Act Operations of the SARF/TWS and storage of supercompacted TRU-mixed wastes would be consistent with the interim status change requested under RCRA in November 1989

Routine Operations Analyses were conducted to assess worker and public exposures to radiation and hazardous chemicals during both routine operations and potential accidents Routine operation of the SARF and the TWS was estimated to result in a combined maximum radiation dose to a member of the public of 2×10^{-11} rem/year committed effective dose equivalent (CEDE), which is approximately one billionth of that permitted under applicable limits established by the Environmental Protection Agency (10 mrem/year from airborne pathways) Assuming the same workers would operate both the SARF and the TWS, the average annual exposure to each worker was estimated to be approximately 0 9 rem or about 20 percent of the

applicable DOE limit (5 rem-effective dose equivalent), which would be a reduction in exposure relative to the no action alternative

Risks from Abnormal Events A range of potential accidents was considered in the EA based on preliminary design characteristics and a knowledge of existing DOE plutonium operations By using conservative assumptions (i e , those that tend to overestimate potential impacts), the EA attempted to bound all reasonably foreseeable adverse impacts of the proposed action

Principal exposure pathways are external radiation and potential uptake of radioactive material by inhalation of respirable particles Exposures were calculated for maximally exposed individual members (MI) of the public and the RFP workforce as well as to the projected population living within a 50-mile radius of RFP in the year 2008 (2,916,000 people) The MI is a hypothetical offsite individual, usually located at or not far from the RFP boundary, in a location of maximum possible exposure as determined by the AIRDOS-EPA computer code

To lend further perspective, the accident calculations were also made under two sets of meteorological conditions defined as representative and unfavorable The representative analyses incorporated atmospheric conditions (e g , wind speed and direction) representative of prevailing conditions at RFP, while the unfavorable analyses utilized conservative assumptions to provide an upper estimate of potential impacts The unfavorable conditions will have a lower probability of occurrence than that for representative conditions

Accident Scenarios A suite of accidents was analyzed to estimate potential radiological exposures to workers and the general public (1) a criticality, (2) a fire on a loading dock, (3) a waste bag rupture at a glovebox airlock, (4) a breach of a drum on a loading dock, (5) a design basis earthquake, and (6) a design basis wind (DBW) Hypothetical exposures to the MI member of the public ranged from 4.6×10^{-9} to 5.8×10^{-1} rem CEDE and from 4.9×10^{-8} to 1.4×10^{2} rem CEDE for representative and unfavorable meteorological conditions, respectively The highest potential exposures to the public would be associated with the fire on the loading dock for representative conditions and with the DBW scenario for the unfavorable conditions (It should be noted that the actual risks associated with the temporary staging of supercompacted wastes on the loading dock would not increase relative to current operations because administrative controls would be implemented to limit the amount of radioactivity at risk on the loading dock to existing levels) The population exposure was

estimated to be highest under both sets of meteorological conditions for the DBW scenario, with a calculated projection of 6 to 109 excess latent cancer fatalities (LCFs) The calculated LCFs must be viewed in conjunction with the low probability of occurrence (10^{-4}/year) of the DBW

Maximum individual occupational exposures were calculated for the accident scenarios Potential exposures (excluding that from a criticality accident, as discussed below) were calculated to range from 0 02 to 66 rem CEDE The highest exposure is associated with the fire on the dock scenario Exposures in the dock fire scenario are assumed to occur during the initial stages of the fire before evacuation could take place and would be incurred by a small number of workers in the immediate area Exposures from the dock fire (and all other DBAs) would not result in any prompt fatalities and are unlikely to produce any LCFs

Regarding a potential criticality accident, reaching a critical mass of plutonium in the supercompactor or a supercompacted waste drum would require multiple violations of operating procedures and controls, and, therefore, is considered to be an extremely unlikely occurrence However, because it is not possible to entirely rule out such an event, it was analyzed in the EA Depending on their proximity to the accident, workers could suffer lethal radiation exposure However, the actual risks associated with this scenario are very small due to the unlikely probability of occurrence In more than thirty-five years of operations at RFP, no criticality accident has been experienced

Severe Accident A postulated accident scenario of an aircraft crash into the SARF/TWS facilities and/or any of the buildings proposed to store supercompacted waste was analyzed in the EA The crash was assumed to result in a fire and release of radioactivity to the environment and was based, in part, on analyses conducted for the 1980 Rocky Flats Plant Final Environmental Impact Statement (FEIS) The scenario takes into account the probabilities of an aircraft crash at the RFP, the penetrability of walls/barriers of storage buildings, the ratio of the waste storage areas to the total area within a building, and assumes that storage areas are at full capacity following implementation of supercompaction The annual probability of release from any waste storage area was estimated to be approximately $1\ 2 \times 10^{-7}$, ranging from $1\ 1 \times 10^{-8}$ to $3\ 2 \times 10^{-8}$ for each of the five storage areas for TRU-mixed waste The associated incremental population exposure (i e , compared to exposures associated with storage of uncompacted wastes) ranges from $1\ 7 \times 10^{4}$ to $1\ 5 \times 10^{6}$ person-rem

(5 to 420 LCFs), depending on the storage area involved and meteorological conditions existing at the time of the accident

Hazardous Chemical Analyses Risk analysis was also conducted to determine the predicted cumulative cancer risk to the public at the site boundary due to hazardous chemical emissions from the routine operation of the SARF and TWS The predicted cumulative cancer risk was less than one chance in one million Hazardous chemical exposures from accidents associated with the proposed action were predicted to result in insignificant hazardous chemical impacts to an individual located at the site boundary Because the SARF and TWS would be operated in gloveboxes and other safety features would be implemented, there should be no opportunity for workers to come in physical contact with any hazardous materials during routine operations, thereby minimizing occupational exposures to hazardous chemicals Impacts to workers from potential accidental releases of hazardous materials were also evaluated and determined to be insignificant

Transportation and Disposal Transportation and disposal impacts of wastes treated by the SARF and the TWS were discussed and analyzed in the Supplemental Environmental Impact Statement for the Waste Isolation Pilot Plant (DOE/EIS-0026-FS, January 1990) Supercompaction would result in decreased waste volumes, increased waste densities, and therefore less waste volume to be transported and disposed Although more radioactivity could be shipped per shipment, greater densities and the packaging of the wastes as pucks inside 55-gallon drums would result in additional self-shielding of radiation as well as provide an additional barrier during potential transportation accidents As previously discussed, the SARF and TWS treated wastes would be shipped in double-walled steel TRUPACT II containers licensed by the NRC that meet all applicable Department of Transportation safety regulations Wastes processed through the SARF/TWS would pose no unusual transportation and handling risks or preclude any alternatives bearing on the long-term performance of the WIPP

In comparing the environmental impacts resulting from the proposed action and the alternatives, neither the proposed action nor any alternative was found to result in significant adverse impacts The proposed action was predicted to result in beneficial impacts due to waste volume reductions that would decrease waste transportation and disposal volumes

DETERMINATION Based on the information and analyses in the EA as well as the review of the information received from the commenters, DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, within the meaning of NEPA, therefore, DOE has determined that preparation of an environmental impact statement is not required

ATTACHMENT

Response to Comments Received on the Proposed FONSI

Fourteen organizations and individuals submitted comment letters on the proposed FONSI and the supporting EA during the public review and comment period from March 30 to May 22, 1990 All of the comments and the respective responses are published in Appendix F to the Environmental Assessment as "Response to Comments on DOE/EA-0432, July 1990 "

Five comments that were specific to the proposed FONSI and the DOE's responses to those comments follow

Comment *Page 3 of the FONSI confirms suspicions that the SARF is simply a short-term emergency solution to avoid surpassing the 1601 cubic yard limitation imposed by CDH The FONSI admits to needing the SARF to continue operations while complying with RCRA*

Response Planning for the SARF began in 1985 in order to reduce the external radiation dose to workers during waste handling and repackaging, to enhance safety, and to reduce waste volume and process costs Initial funding for the SARF was received in Fiscal Year 1987 The planning and funding for the SARF were initiated prior to the implementation of the 1601-cubic-yard volumetric storage limit for TRU-mixed waste that is contained in a letter dated December 15, 1988, from Thomas P Looby, Assistant Director for Health and Environmental Protection, Colorado Department of Health As proposed, the SARF and TWS will reduce the volume of TRU-mixed wastes to be generated at RFP, will reduce the volume of wastes currently being stored, and will help ensure continued compliance with the 1601 cubic yard volumetric storage limitation until alternate storage and/or disposal sites are approved

Comment *Page 6 of the FONSI states that effluent from the gloveboxes would be filtered and then discharged to the atmosphere The FONSI fails to address the composition of the effluent and the*

amount of that effluent A finding of no significant impact should assess exactly what is being discharged and why that discharge has no significant impact As stated in my comments on the EA, an alarm will sound if alpha radiation is detected above a limit, but the FONSI fails to state what the contingency plan is during the time between the sounding of the alarm and the implementation of the corrective action Specifically, does the operation cease until the cause is found?

Response As stated on page 5-2 of the EA, High Efficiency Particulate Air (HEPA) filters will be operated to reduce particulate emissions to not more than 0 02 pCi/m^3 The assessment of the risk of these emissions is found on pages 5-11 and 5-16 of the EA and mentioned under "Routine Operations" in the FONSI Continuous monitoring will confirm the safe concentrations of particulates, americium and plutonium

If emissions of non-specific alpha emitters exceed 0 02 pCi/m^3, an investigation will be conducted to determine the cause(s) and the corrective action that will be taken If there is a potential health risk, the necessary operations will be shut down until the problems are corrected There is no immediate or long-term health hazard at a release level of 0 02 pCi/m^3 For example, this concentration is one hundred times lower than the most restrictive Derived Air Concentration (DAC) for workers, as presented by the U S Environmental Protection Agency Federal Guidance Report #11 (EPA-520/1-88-020) which is based on recommendations from the International Commission on Radiological Protection (ICRP) Additionally, this concentration level does not consider the dilution that will occur when the material leaves the discharge point and is dispersed in the surrounding air

The composition of the hazardous chemicals expected to be released annually under normal operations is provided in Table 5-10 Table 5-10 also provides an estimate of the upperbound quantities of annual chemical releases and a hazard assessment of their significance

Comment *Page 6 also states that drums of supercompacted waste will have carbon composite filters for venting of gas Will the filtered effluent gas cause any significant impact? What is the composition of the effluent filtered gas?*

Response The effluent filtered gas is expected to be composed of carbon dioxide and hydrogen The carbon composite filter would retain particulate radioactive material and allow the generated gas to diffuse out of the drum into the surrounding area However, there is not expected to be sufficient carbon dioxide or hydrogen gas generation from supercompacted waste to cause any significant impact

Comment *Page 8 of the FONSI states that the SARF and TWS would create no detectable increases in emissions to the environment The EA did assess the risks to the public and the workers, so there must be some increase in emissions for the public and workers to be at some increased risk In fact, pages 7 & 8 of the FONSI admit that there is some increased exposure from the routine operation of the proposed action*

Response Page 8 of the proposed FONSI states that routine operation of SARF and TWS was estimated to result in a combined maximum radiation dose to a member of the public of approximately one billionth of that permitted under applicable limits This radiation dose is not detectable Page 7 does not discuss risk from routine operations, but from postulated accidents

Comment *Page 11 goes to great lengths to point out that criticality is unlikely and that it has never occurred at the RFP As stated in my comments supra, were not the 1957 and 1969 fires the result of criticality or aggravated by criticality as a result of the fire fighting efforts? Criticality does not seem as unlikely as the FONSI would have us believe*

Response Neither fire was the result of a criticality situation, and even though water was used on burning plutonium for the first time in the 1969 fire, its use did not create a nuclear criticality The September 11, 1957, fire started in a can of plutonium casting residue in processing Building 771 The May 11, 1969, fire was reported as a result of spontaneous ignition of a 1 5 kilogram briquette of scrap plutonium alloy in an open metal can

Summary of Response to Comments on the Environmental Assessment

The comments on the EA were segregated into 18 categories of issues and concerns Following is a summary of the comments and the responses for each respective category The complete comments and the respective responses are contained in the "Response to Comments on DOE/EA-0432" document (Appendix F to the EA)

1 0 VOLUME REDUCTION (Nine Comments)

Commenters sought information on the volumes of waste being produced and the volume reduction that is proposed to be achieved by the supercompactor In response to the comments, further clarification is provided in Appendix F to the EA on the anticipated waste volumes to be reduced Appendix F provides a table that shows the 1987 and 1988 average, the approximate normal TRU and TRU-mixed waste production volumes, and the respective volumes following supercompaction

In response to a comment on determining the compactability of drums of waste, it is stated that the compactability will be determined based on the weight and the mass of waste in the drum Pucks will be selectively placed in the overpack drum so as to minimize void space If necessary, the height of the pucks will be controlled by not compacting to maximum density, thus minimizing void space in the overpack

2 0 OPERATIONS (Nine Comments)

Comments were received on use of respirators, use of photoelectric cells, inspections and maintenance, compacting wastes without the use of metal drums, inclusion of diagrams of hydraulic systems, glovebox details etc , operation of the TWS automatic kickout device, and the comparison of SARF operation with other operations The responses respectively discussed that the only parts of the SARF and TWS operation that will require respiratory protection are the opening of boxes or drums of waste to be placed into the gloveboxes, and the removal of filled drums from the bag ports Administrative procedures dictate that respirators will be worn whenever a waste drum or other container is opened or whenever material is being removed from a glovebox through a bag port as an additional precautionary measure

In response to comments regarding use of photoelectric cells, it is stated that the grappler hoist is operated by controls located on a panel outside of the glovebox and, therefore, use of the photoelectric cell system does not apply The photoelectric cells are designed so they can not be overridden by the operator Operation of the cells will be verified by a Preventive Maintenance Order (PMO) schedule

Standard operating procedures and administrative controls will require and assure adequate inspection and maintenance of the floor surface and sealant, the SARF and TWS equipment, gloveboxes, etc

In response to the comment regarding the compaction of wastes without using metal drums, it was stated that metal drums are necessary to contain the wastes during supercompaction and precompaction, and the drums are required by the Waste Isolation Pilot Plant Waste Acceptance Criteria (WIPP-WAC)

With regard to diagrams of hydraulic systems, glovebox details, and their placement, etc , they were not included in the EA because they contain Unclassified Controlled Nuclear Information subject to Section 143 of the Atomic Energy Act of 1954 as amended and are therefore not available for public dissemination

Regarding operation of the automatic kick-out device on the TWS, when materials are introduced to the shredder that will not pass through the blades, the automatic kick-out device will reverse the direction of rotation of the shredder blades In the event that unshreddable material becomes lodged in the shredder, the unit will be manually cleaned via a maintenance access panel

The response to the comment of comparing the SARF to current operations states that the scope of the EA is to analyze the SARF and TWS as a proposed action Because the SARF improves upon current operations, it will result in less risk than the no action alternative

3 0 VENTILATION AND FILTRATION (24 Comments)

Many commenters were concerned with the plutonium contained in the ventilation ducts at RFP and the adequacy of the ventilation system in Building 776 Plutonium has been found in a number of ducts at RFP, and a program is underway to remove plutonium from any duct that has 400 grams or more of plutonium

Also, steps will be taken to reduce future accumulation, and a comprehensive monitoring program is being implemented to monitor any further accumulation so that accumulation can be addressed before it becomes a problem With the exception of one line that feeds into Plenum 250 (which is in no way affected or influenced by operation of the SARF and TWS), the duct assay program has found only small amounts of plutonium in ducts in Building 776 The measurement program is continuing and will provide more details on the status of plutonium in ducts The SARF and TWS will have completely new ductwork that extends to the second story of Building 776 This ductwork will tie into an elbow just above Plenum 205, which contains four stages of HEPA filters Operation of the SARF and TWS will not impact or be impacted by any current accumulation of plutonium in ducts at Rocky Flats

Regarding ventilation, the responses discuss that Plenum 205 in Buildings 776/777 ventilation and filtration system is operating at 40 percent capacity With addition of the SARF and TWS gloveboxes, Plenum 205 will be operating at approximately 67 percent capacity Gases and air from gloveboxes and down-draft tables are filtered through a minimum of four stages of high efficiency particulate air (HEPA) filters prior to discharge through rooftop ventilation exhausts The first bank of HEPA filters has an efficiency of 99 97 percent, and all succeeding banks have an efficiency of 99 80 percent Continuous particulate air samplers and selective alpha air monitors continuously monitor the effluents to indicate that the filters are operating correctly The resulting impacts are predicted to be insignificant (a maximum annual individual exposure of 2×10^{-11} rem)

The SARF glovebox does not incorporate a bypass around the prefilter European commercial reprocessing facilities are not good comparisons to SARF glovebox operation because their operations may include handling material with much higher levels of radioactivity and much higher dose levels than the waste to be processed in the SARF A number of European facilities that are already using supercompaction do not provide a comparable glovebox design because none of them have installed the supercompaction equipment in a glovebox

The EA used very conservative assumptions to estimate the releases of hazardous materials during operation of the SARF and TWS The maximum releases of hazardous chemicals to the environment are

quantified in the EA The risks associated with the potential hazardous chemical releases from the SARF and TWS operation are not significant

4 0 REPACKAGING (Five Comments)

There were concerns with the repackaging, handling and transportation of old deteriorated containers of waste, containment of the wastes, and worker exposure The responses to comments explain that the wastes to be repackaged were generated within approximately the last 5 years, and have been continuously stored within buildings at RFP since generation In compliance with the Resource Conservation and Recovery Act (RCRA) and Standard Operating Procedures, all RCRA storage areas are inspected on weekly schedules Any potential container problems are resolved Prior to transfer of existing wastes from the RCRA storage areas for repackaging, the containers will be examined to detect any leaking material, labeling problems, etc Any problems that are found will be corrected prior to movement of the container Standard Operating Procedures and verification forms will be used to ensure proper transfer and repackaging of the wastes Wastes will be repackaged in the Advanced Size Reduction Facility (ASRF) and the Size Reduction Vault Personnel working in the ASRF will be required to wear full-face mask respiratory protection, and personnel working in the Size Reduction Vault will be required to use supplied air suits, in order to limit worker exposure

5 0 WASTE CHARACTERIZATION AND COMPATIBILITY (Eight Comments)

Three comments expressed concerns regarding the mixing of incompatible wastes The response explains that waste segregation will be conducted in compliance with Standard Operating Procedures and RCRA which require personnel training, recordkeeping, contingency plans, quality assurance audits and emergency procedures in order to avoid mixing of incompatible wastes Due to the nature of the materials, it is not feasible to actually test the materials to confirm content

In response to other comments, it was clarified that the SARF and TWS are proposed to treat only TRU and TRU-mixed wastes The treatment of other wastes is not proposed

6 0 GAS GENERATION (10 Comments)

The comments requested additional information regarding the carbon composite filters that will be used to vent drums of supercompacted wastes The response explains that the TRU Waste Compliance Program requires each drum of waste, not just supercompacted waste, to be equipped with a filter The filter materials to be used are carbon-carbon composite high efficiency particulate air filters, which trap radionuclides while allowing gases such as hydrogen to pass through The filters are resistant to radiation and acid damage, and exhibit a filtering efficiency of greater than 99 97 percent Each filter is individually tested and certified prior to use

There were two comments regarding gas ignition and explosion during drum piercing The response states that several factors preclude potential ignition of gases soft wastes will be manually sorted, hard wastes will have recently been placed in the drum, minimizing the period of time for gases to accumulate, and a waste drum sampling program that was completed in March of 1989 indicated that gas concentrations were well below flammable/explosive levels

In response to other comments, it was reiterated that supercompacted wastes will be certified to meet the WIPP-WAC Supercompaction will not increase the maximum rate of gas generation from radiolytic degradation Consequently, the standard carbon filters will have adequate flow capacity to vent supercompacted wastes The supercompaction process will tend to rupture any bags or containers and enhance venting of gases within the drum of supercompacted waste The compaction process will generate very little heat, therefore, no chemical reactions should occur during the compaction process that would cause a rapid pressure increase in the drum With the waste management controls (segregation of soft and hard wastes, segregation of incompatible wastes and absence of free liquids, etc), the excessive gas generation problems that have been observed in less than 1 percent of the supercompacted waste at another site are not expected to occur at RFP

7 0 CRITICALITY (14 Comments)

Comments on criticality expressed concerns with criticality levels and controls, the possibility of a criticality, non-destructive assay (NDA) testing, and criticality alarms The responses reiterate the preliminary criticality limits placed on the waste containers entering and exiting the SARF and TWS and on the drums of waste placed in storage The criticality limits are preliminary because, prior to establishing final criticality limits and operation of the SARF and TWS, a final criticality review will be conducted to confirm operating procedures, equipment placement, the proximity of other plutonium sources, etc The final criticality limits will be extremely conservative and will be strictly enforced

In the very unlikely event that a drum was to contain a critical mass of plutonium, worst-case conditions would be required for a criticality to occur In the EA, these worst-case conditions were assumed to be present only for the purposes of accident impact evaluations All personnel working in buildings in which plutonium is handled and stored are trained to recognize and respond to criticality alarms

8 0 LIQUIDS MANAGEMENT AND PROCESSING (10 Comments)

Comments in this category sought information on liquids contained in drums to be supercompacted, and on the collection, transfer, and treatment of the liquids In response, it is reiterated that all wastes to be treated by the SARF will be screened for the presence of free liquids by real time radiography Containers with free liquids will not be processed in the SARF Any residual liquids that are compressed out of the drums during supercompaction will be collected and ultimately transferred to Building 374 for waste treatment by an evaporator Additional explanation is provided in the responses regarding the liquid collection and transfer system design In response to two comments, it is stated that the proposed action will not produce liquid wastes that will be spray-irrigated

9 0 IMPACTS TO GREAT WESTERN RESERVOIR (Two Comments)

One commenter was concerned about potential impacts to Great Western Reservoir In response, it is confirmed that TRU-mixed wastes will be stored in RCRA-permitted storage units in buildings on-site and

monitored to prevent any contamination or impacts to surface or groundwater Operation and storage will be conducted in compliance with RCRA, which requires personnel training, facility maintenance, contingency plans, emergency procedures and recordkeeping The proposed action is not predicted to cause impact to Great Western Reservoir

10 0 BEIR V (Two Comments)

Comments requested that decisions on the EA be delayed until the DOE has completed its evaluation of BEIR V (National Research Council's Committee on the Biological Effects of Ionizing Radiations (BEIR) fifth report on the Health Effects of Exposure to Low Levels of Ionizing Radiation), and that all analysis be based on new risk estimates contained in the BEIR V report The response to comment states that the major changes resulting from the BEIR V report concern low energy transfer (LET) radiation (beta and gamma) The DOE is continuing to review the BEIR V report to determine any warranted changes in risk estimation methods for the generally low dose/low dose rate circumstances analyzed for the proposed action For the dose calculations presented in the SARF and TWS EA, which primarily involves alpha radiation exposure, BEIR V is not significant because resulting risks from any anticipated changes in health effect factors would remain low and would not alter the conclusions regarding the environmental impacts of the proposed action

11 0 RADIOLOGICAL IMPACT ANALYSIS (27 Comments)

Several comments stated that supercompacted wastes should not be stored in buildings that do not meet criteria for design basis wind and design basis earthquakes The response states that the DOE is continuing to evaluate all possible options to reduce the risks to the lowest possible levels For example, efforts will be implemented over the next two-to-three-year period to reduce the risks of storing supercompacted wastes to levels lower than those associated with the status quo by transferring wastes into buildings designed to withstand severe natural phenomena In the long range plan for Rocky Flats, Building 776 was identified as the place to put the SARF and TWS because Building 776 had the space to put this equipment and it was close to the size reduction facilities and other waste handling equipment It is planned that waste handling should become a self-contained operation This reduces handling of waste and allows for more efficient operations The risks identified in the EA come from the storage of waste and not from

operations associated with the SARF and TWS themselves Only small amounts of waste will be staged in the vicinity of the SARF and TWS for processing In the early 1990's, the exterior containment of Buildings 776/777 is scheduled to be upgraded to withstand a design basis wind and a design basis earthquake

There were several comments on accident analysis to which the responses provide additional information on release fractions, Dose Conversion Factor, worker doses, etc Several comments recommended the evaluation of other accident scenarios The responses demonstrate that the alternative accident scenario was either not feasible or was bounded by accidents that are analyzed in the EA

12 0 HAZARDOUS CHEMICAL IMPACT ANALYSIS (Three Comments)

In response to two comments regarding the use of Threshold Limit Values (TLVs) and Acceptable Intake Chronic (AIC) levels, it is explained that TLVs establish acceptable time - weighted average concentrations of various contaminants to which workers can be exposed during a normal 8-hour shift, 40-hour work week schedule without receiving any adverse effects after a lifetime of exposure This type of analysis is adequate for assessing impacts to the public considering the conservatisms used in the dispersion modeling and in the release fractions, and considering the shorter duration of exposure AIC values are only defined for chronic long-term exposures They are not appropriate for very short-term acute exposures The TLV-based Hazard Indices are the current methodology used to assess potential health effects from short-term accident exposures

In response to a comment that hazardous chemical exposures from TWS operation were not discussed in the EA, the commenter is referred to Table 5-10 in the EA that contains hazardous chemical emissions and impacts from SARF and TWS operation

13 0 STORAGE AND STORAGE LIMIT (Nine Comments)

Several of the commenters viewed the proposed action as a short-term plan to subvert the intent of the 1601 - cubic yard limit for on-site storage of TRU-mixed waste The response states that planning for the SARF began in 1985 in order to reduce the external radiation dose to workers during waste handling and

repackaging, to enhance safety, and to reduce waste volume and process costs Initial funding for the SARF was provided in Fiscal Year 1987 The planning and funding for the SARF were initiated prior to the implementation of the 1601 cubic yard volumetric storage limit for TRU-mixed waste that is contained in a letter dated December 15, 1988, from Thomas P Looby, Assistant Director for Health and Environmental Protection, Colorado Department of Health As proposed, the SARF and TWS will reduce the volume of TRU-mixed wastes to be generated at RFP, will reduce the volume of wastes currently being stored, and will help ensure continued compliance with the 1601 cubic yard volumetric storage limitation until alternate storage and/or disposal sites are approved

Two comments sought the NEPA documentation for alternate near-term storage for RFP TRU-mixed waste that includes both on-site and off-site options Two comments stated that the proposal for alternative storage should be considered before approving the EA The response states that separate NEPA documentation for this proposal is being prepared, and will be provided for public review when available

Storage of RFP wastes at an alternative site was considered as an alternative to supercompacting the wastes The no action alternative and the no treatment alternative both consider shipment of the wastes offsite for storage and/or disposal without supercompaction However, shipping the wastes to another site for storage or disposal does not meet the goals of supercompaction which are (1) reduction of worker exposure, (2) volume reduction to satisfy waste minimization objectives, and (3) more efficient waste handling methods during storage and transportation

14 0 TRANSPORTATION (Three Comments)

One comment questioned the quality of the TRUPACT-II containers for transport of the wastes to WIPP and the acceptability of other containers The response states that the TRUPACT II container has been designed and constructed to comply with U S Nuclear Regulatory Commission regulations (10 CFR Part 71), which includes meeting acceptable package performance criteria and a quality assurance program The quality assurance program will detect and require the correction of any defects With the TRUPACT II available as a shipping package for TRU waste, no alternative containers currently need to be assessed

In response to one comment, it is reiterated and demonstrated that the EA has assessed the risks of transporting compacted wastes In response to a comment regarding rail transportation of wastes to WIPP, the response states that the DOE is committed to using truck transportation during the first five years of waste shipments to WIPP In regard to the availability and adequacy of emergency equipment, information contained in the WIPP Supplemental Environmental Impact Statement (SEIS) was referenced and discussed

15 0 THIRD PARTY OVERSIGHT (Two Comments)

The commenters stated that there should be third party oversight and monitoring of the proposed action In response it is stated that the Colorado Department of Health and the Environmental Protection Agency will provide oversight, monitor and audit the proposed action for compliance with RCRA and the RCRA permit In addition, the proposed action will be required to comply with OSHA, DOE guidelines and internal Rocky Flats Plant audits, quality assurance programs and Standard Operating Procedures

16 0 STATUTORY COMPLIANCE (Five Comments)

Three of the comments related to RCRA compliance and permit requirements The responses reiterate that the EPA compatibility chart in 40 CFR 261, Appendix V provides the basis for the compatibility of the waste forms to be stored at RFP The Rocky Flats Plant was generating hazardous wastes at the time RCRA regulations were promulgated in 1980, therefore, RFP is regulated by the interim status standards (40 CFR 265) When a draft RCRA permit is issued, it will be subject to full public review and comment The Director of the Colorado Department of Health must allow at least 45 days for public comment, and will schedule a public hearing at his initiative or if requested

The response to one comment demonstrates the DOE's compliance with NEPA prior to and during the preparation of the EA and FONSI

The response to a comment regarding compliance with the Colorado Clean Air Act and the associated regulations states that the SARF and TWS are subject to the requirements of the act and the associated regulations Lead, beryllium mercury, and radionuclides are used at RFP and have been designated as

hazardous air pollutants These substances exist primarily in particulate form and are therefore being collected on HEPA filters Emissions of volatile organic chemicals are also subject to the air quality regulations

17 0 COMMENT PERIOD (Three Comments)

These commenters sought an extension of the public comment period, DOE accordingly extended the public comment period on the EA and proposed FONSI by 23 days to May 22, 1990

18 0 OTHER ISSUES AND CONCERNS (Six Comments)

In response to one comment, further definition of the term "transuranic waste" is provided, and discussed in Appendix F to the EA

In response to a comment that the DOE should consider the alternative of halting all warhead production at RFP, it is stated that nuclear weapons production is authorized by the President of the United States and is beyond the scope of the SARF/TWS project, which is the subject of this EA However, if nuclear weapons production were halted, the proposed action would be beneficial during decontamination and decommissioning of the site

In response to a comment suggesting an alternative of operating the proposed facilities elsewhere, the response states that if the proposed action were to be located and operated at WIPP, for example, impacts on the RFP site and the transportation impacts would be the same as for the no action alternative

In response to other comments, it is confirmed that the cited average level of plutonium in soils was taken from the WIPP SEIS, the terms "detectable" and "significant" as used in the EA are not synonymous, and the DOE concurs that communities located within a 10-mile radius of the Rocky Flats Plant contain a significant population